DOCKET NO: 254580US0PCT

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF	:
RALF FINK, ET AL.	: EXAMINER: SELLMAN, C. I.
SERIAL NO: 10/501,072	:
FILED: JULY 9, 2004	: GROUP ART UNIT: 1792
FOR: RADIATION-CURABLE COATINGS FEATURING IMPROVED ADHESION	:

APPEAL BRIEF

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

SIR:

This is an appeal from the Examiner's Final Rejection dated June 11, 2009, of Claims 7-11, 17-20, 22-25, 27 and 29. A Notice of Appeal was filed on October 13, 2006.

I. REAL PARTY IN INTEREST

The real party in interest is BASF Aktiengesellschaft of Germany, by virtue of the assignment recorded October 12, 2004, at Reel/Frame 015875/0144.

II. RELATED APPEALS AND INTERFERENCES

Appellants, Appellants' legal representative and their assignee are not aware of any other appeals or interferences which will directly affect or be directly affected by or having a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

The appealed claims are Claims 7-11, 17-20, 22-25, 27 and 29. Claims 7-11, 17-20, 22-25, 27 and 29 stand rejected.

Claims 13-15 are allowed.

The status of Claims 7-11, 13-15, 17-20, 22-25, 27 and 29 is "previously presented". The status of Claims 1-6 is "canceled".

IV. STATUS OF AMENDMENTS

A Request for Reconsideration was filed on August 3, 2009. The claims were not amended. An Advisory Action was mailed on September 18, 2009.

V. SUMMARY OF CLAIMED SUBJECT MATTER

As claimed in **Claim 7**, the present application relates to a mixture, comprising at least one radiation-curable composition (I) and at least one pressure-sensitive adhesive (II);

wherein said mixture does not comprise an adhesive which requires an additional compound as a curing agent;

wherein the adhesive (II) comprises an adhesive composition crosslinkable by active radiant energy;

wherein the radiation-curable composition (I) comprises

(A) at least one polymerizable compound comprising two or more copolymerizable, ethylenically unsaturated groups,

(B) optionally, reactive diluents,

(C) optionally, photoinitiator, and

(D) optionally at least one coating additive.

See for example, page 1, line 34 to page 50, line 25, of the specification.

As set forth in **Claim 11**, the present invention relates to a mixture, comprising:

90 – 99.9% by weight of at least one radiation-curable composition (I); and

0.1 – 10% by weight of at least one pressure-sensitive adhesive (II);

wherein said mixture does not comprise an adhesive which requires an additional compound as a curing agent;

wherein the adhesive (II) comprises an adhesive composition crosslinkable by active radiant energy.

See for example, page 1, line 34 to page 50, line 25, of the specification.

Claim 17 relates to a method of coating a substrate, comprising:

coating a substrate with a coating material comprising a mixture, thereby obtaining a coated substrate;

wherein said substrate is plastic, glass or metal;

wherein said mixture comprises at least one radiation-curable composition (I) and at least one pressure-sensitive adhesive (II);

wherein said mixture does not comprise an adhesive which requires an additional compound as a curing agent;

wherein the adhesive (II) comprises an adhesive composition crosslinkable by active radiant energy;

wherein the radiation-curable composition (I) comprises

(A) at least one polymerizable compound comprising two or more copolymerizable, ethylenically unsaturated groups,

(B) optionally, reactive diluents,

(C) optionally, photoinitiator, and

(D) optionally at least one coating additive.

See for example, page 1, line 34 to page 50, line 25, of the specification.

Claim 18 relates to a method of coating a substrate, comprising:

coating a substrate with a coating material comprising a mixture, thereby obtaining a coated substrate;

wherein said substrate is metal foil, plastic film or a composite of metal foil and plastic film;

wherein said mixture comprises at least one radiation-curable composition (I) and at least one pressure-sensitive adhesive (II);

wherein said mixture does not comprise an adhesive which requires an additional compound as a curing agent;

wherein the adhesive (II) comprises an adhesive composition crosslinkable by active radiant energy;

wherein the radiation-curable composition (I) comprises

(A) at least one polymerizable compound comprising two or more copolymerizable, ethylenically unsaturated groups,

(B) optionally, reactive diluents,

(C) optionally, photoinitiator, and

(D) optionally at least one coating additive.

See for example, page 1, line 34 to page 50, line 25, of the specification.

Claim 29 relates to a mixture, comprising:

90 – 99.9% by weight of at least one radiation-curable composition (I); and

0.1 – 10% by weight of at least one pressure-sensitive adhesive (II);

wherein said mixture does not comprise an adhesive which requires an additional compound as a curing agent;

wherein the adhesive composition crosslinkable by active irradiation of energy has a molar weight of between 200 000 and 1 500 000 g/mol.

See for example, page 1, line 34 to page 50, line 25, of the specification.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

(A) Claims 7-8, 10, 19-20 and 22 stand rejected under 35 U.S.C. § 102(b) as anticipated by Tsuchiko (JP 6302081, abstract).

(B) Claims 9, 11, 17-18, 24-25 and 27 stand rejected as being obvious under 35 U.S.C. §103 (a) over Tsuchiko in view of Akiyama (JP 2002309185, abstract).

(C) Claims 23, 28-29 stand rejected as being obvious under 35 U.S.C. §103 (a) over Tsuchiko in view of Kamiya (JP 11228926, abstract).

VII. ARGUMENT

Ground (A)

Claims 7-8, 10, 19-20 and 22 stand rejected under 35 U.S.C. § 102(b) as anticipated by Tsuchiko (JP 6302081, abstract). That rejection is untenable and should not be sustained.

Applicants note that the rejections are based on the abstracts. The Examiner is requested to consider the references in their entirety and provide a translation. In this context, Applicants wish to draw the Examiners' attention to MPEP 706.02.II.

> "Citation of and reliance upon an abstract without citation of and reliance upon the underlying scientific document is generally inappropriate where both the abstract and the underlying document are prior art. See *Ex parte Jones,* 62 USPQ2d 1206, 1208 (Bd. Pat. App. & Inter. 2001) (unpublished). To determine whether both the abstract and the underlying document are prior art, a copy of the underlying document must be obtained and analyzed. If the document is in a language other than English and the examiner seeks to rely on that document, a translation must be obtained so that the record is clear as to the precise facts the examiner is relying upon in support of the rejection. The record must also be clear as to whether the examiner is relying upon the abstract or the full text document to support a rejection."

If the rejections are based on the full translations, the Examiner is requested to state so on the record.

The present invention as set forth in **Claim 7** relates to relates to a mixture, comprising at least one radiation-curable composition (I) and at least one pressure-sensitive adhesive (II);

wherein said mixture does not comprise an adhesive which requires an additional compound as a curing agent;

wherein the adhesive (II) comprises an adhesive composition crosslinkable by active radiant energy;

wherein the radiation-curable composition (I) comprises

(A) at least one polymerizable compound comprising two or more copolymerizable, ethylenically unsaturated groups,

(B) optionally, reactive diluents,

(C) optionally, photoinitiator, and

(D) optionally at least one coating additive.

The Examiner states that the acrylic polymer of Tsuchiko can be crosslinked using UV. In this context, she also refers to US 2001/0023264 (Yamamoto), para. 0029; US 2002/0037413 (Kishioka et al), para. 0027 and US 6,844,034 (Touhsaent), col. 5, lines 22-37 as evidentiary references. (See the paragraph bridging pages 4 and 5 of the Office Action dated June 11, 2009.) However, in the first additional reference (Yamamoto), the acrylic polymers are reacted with methacryloyloxyethyl isocyanate to yield a reactive acrylic polymer. The second reference (Kishioka et al) describes an acrylic polymer in combination with a UV absorber. Further, the third reference (Touhsaent) describes that an epoxy acrylate is added because it has reactive acrylic double bonds which can react with double bonds in inks that are UV curable. So in each case, specific UV curable double bonds have to be added in one form or another.

Further, contrary to the Examiners' statement, Yamamoto (US 2001/0023264) does not provide a disclosure or suggestion that all polyacrylates are crosslinkable by UV radiation. In fact in Yamamoto the phrases "acrylic polymer" vs. "reactive polymer" are used, see e.g. paragraph [0020], in which the phrase "acrylic polymer" denotes polymers or copolymers obtained by radical polymerization, see paragraphs [0019] and [0020].

However, a polymer which was obtained by a radical polymerization does not contain any reactive acrylic groups anymore, since these reactive groups reacted during the polymerization. Therefore, a polymer without radically polymerizable groups is obtained, which, of course, cannot further be crosslinked by UV exposure, as it lacks reactive groups.

In order to make these acrylic polymers reactive towards radicals (which are obtained by irradiation of photoinitiators with UV light) reactive groups have to be introduced into these polymers, as done in Example 2. In Example 2 an acrylic polymer bearing hydroxy groups in side chains is reacted with acryloyloxyethyl isocyanate, the isocyanate group reacts with the hydroxy group and, hence, a (radically polymerizable) acryloyl groups is coupled to the acrylic polymer which renders the polymer a "reactive polymer", namely reactive towards radical polymerization, whereas the radicals are provided by the photo initiator upon UV exposure.

Thus, the Examiners' statement (that every acrylic polymer is an acrylic adhesive which is crosslinkable by active radiant energy) with all due respect, is incorrect. In contrast, only those acrylic polymers which bear reactive groups, are crosslinkable in such a way.

Therefore, Yamamoto fails to support the rejection over Tsuchiko.

The acrylic polymers according to Kishioka et al. (US 2002(0037413) (US 2002(0037413) do not bear any reactive groups but need a crosslinker, as pointed out in paragraph [0025] and in the examples, in which polyisocyanates are used as crosslinkers.

Therefore, firstly Kishioka et al., do not disclose adhesives according to the claims of the present invention, which must not require additional compounds as curing agents, and secondly the adhesives according to Kishioka et al. are not crosslinkable by active radiant energy.

Therefore, Kishioka et al. fails to support the rejection over Tsuchiko.

The same is true for Touhsaent (US 6,844,034). The acrylic polymers described in col. 4, line 33 et seq. require a crosslinker, as pointed out in col. 4, line 58 et seq. and col. 5, line 1 et seq.

Therefore, firstly Touhsaent do not disclose adhesives according to the claims of the present invention, which must not require additional compounds as curing agents, and secondly the acrylic polymers according to Touhsaent are not crosslinkable by active radiant energy.

Therefore, Touhsaent fails to support the rejection over Tsuchiko.

The abstract of Tsuchiko (JP 63-0203811) discloses that a radiation-curable pressure sensitive adhesive composition (B) is obtained by mixing

- a thermoplastic resin (a), preferably an acrylic polymer,
- a compound (b) having one ethylenically unsaturated double bond,
- a compound (c) having at least two ethylenically unsaturated double bonds, and
- a photopolymerization initiator (d).

The adhesive (II) according to the present invention has to be crosslinkable by active radiant energy. A simple acrylic polymer as in Tsuchiko, e.g. a polyacrylate, does not have any polymerizable groups. Hence, the acrylic resin according to Tsuchiko cannot be crosslinkable by active radiant energy.

Further, an acrylic resin is not necessarily an adhesive, this is a question of the glass transition temperature Tg of this resin (see e.g. Claim 20). However, the abstract of Tsuchiko is silent about the Tg. Thus, there is no support for equating the thermoplastic resin (a) of Tsuchiko with the pressure sensitive adhesive (II) according to the invention. Therefore, the present invention is not anticipated by Tsuchiko.

Claim 8:

Claim 8 is separately patentable because Tsuchiko (JP 6302081, abstract) fails to disclose or suggest that the radiation-curable composition (I) comprises

40 – 100% by weight of at least one polymerizable compound comprising two or more copolymerizable, ethylenically unsaturated groups (A),

0 – 60% by weight of reactive diluents (B),

0 – 20% by weight of photoinitiator (C), and

0 – 50% by weight of at least one coating additive (D)

wherein (A), (B), (C) and (D) together make up 100% by weight.

Claim 10:

Claim 10 is separately patentable because Tsuchiko (JP 6302081, abstract) fails to disclose or suggest that the mixture as claimed in claim 7 comprises at least one polymer-analogously modified copolymer as compound (A).

Claim 19:

Claim 19 is separately patentable because Tsuchiko (JP 6302081, abstract) fails to disclose or suggest that the adhesive (II) comprises at least one acrylic adhesive.

Claim 20:

Claim 20 is separately patentable because Tsuchiko (JP 6302081, abstract) fails to disclose or suggest that the adhesive has a glass transition temperature T_g of between -60 and -10°C.

Claim 22:

Claim 22 is separately patentable because Tsuchiko (JP 6302081, abstract) fails to disclose or suggest that the adhesive composition crosslinkable by active irradiation of energy has a glass transition temperature T_g of between -60 and +10°C.

Thus, Claims 7-8, 10, 19-20 and 22 are Not anticipated by Tsuchiko (JP 6302081, abstract) within the meaning of 35 U.S.C. §102(b). For all the above reasons, it is respectfully requested that this rejection be REVERSED.

Ground (B)

Claims 9, 11, 17-18, 24-25 and 27 stand rejected as being obvious under 35 U.S.C. §103 (a) over Tsuchiko in view of Akiyama (JP 2002309185, abstract). That rejection is untenable and should not be sustained.

Applicants note that the rejections are based on the abstracts. The Examiner is requested to consider the references in their entirety and provide a translation. In this context, Applicants wish to draw the Examiners' attention to MPEP 706.02.II.

> "Citation of and reliance upon an abstract without citation of and reliance upon the underlying scientific document is generally inappropriate where both the abstract and the underlying document are prior art. See *Ex parte Jones,* 62 USPQ2d 1206, 1208 (Bd. Pat. App. & Inter. 2001) (unpublished). To determine whether both the abstract and the underlying document are prior art, a copy of the underlying document must be obtained and analyzed. If the document is in a language other than English and the examiner seeks to rely on that document, a translation must be obtained so that the record is clear as to the precise facts the examiner is relying upon in support of the rejection. The record must also be clear as to whether the examiner is relying upon the abstract or the full text document to support a rejection."

If the rejections are based on the full translations, the Examiner is requested to state so on the record.

The present invention as set forth in **Claim 9** depends on claim 7 and relates to a mixture as claimed in claim 7, comprising compounds (A) comprising carbonate or urethane (meth)acrylates or carbonate or urethane vinyl ethers.

Claim 11 relates to a mixture, comprising:

90 – 99.9% by weight of at least one radiation-curable composition (I); and

0.1 – 10% by weight of at least one pressure-sensitive adhesive (II);

wherein said mixture does not comprise an adhesive which requires an additional compound as a curing agent;

wherein the adhesive (II) comprises an adhesive composition crosslinkable by active radiant energy.

Claim 17 relates to a method of coating a substrate, comprising:

coating a substrate with a coating material comprising a mixture, thereby obtaining a coated substrate;

wherein said substrate is plastic, glass or metal;

wherein said mixture comprises at least one radiation-curable composition (I) and at least one pressure-sensitive adhesive (II);

wherein said mixture does not comprise an adhesive which requires an additional compound as a curing agent;

wherein the adhesive (II) comprises an adhesive composition crosslinkable by active radiant energy;

wherein the radiation-curable composition (I) comprises

(A) at least one polymerizable compound comprising two or more copolymerizable, ethylenically unsaturated groups,

(B) optionally, reactive diluents,

(C) optionally, photoinitiator, and

(D) optionally at least one coating additive.

Claim 18 relates to a method of coating a substrate, comprising:

coating a substrate with a coating material comprising a mixture, thereby obtaining a coated substrate;

wherein said substrate is metal foil, plastic film or a composite of metal foil and plastic film;

wherein said mixture comprises at least one radiation-curable composition (I) and at least one pressure-sensitive adhesive (II);

wherein said mixture does not comprise an adhesive which requires an additional compound as a curing agent;

wherein the adhesive (II) comprises an adhesive composition crosslinkable by active radiant energy;

wherein the radiation-curable composition (I) comprises

(A) at least one polymerizable compound comprising two or more copolymerizable, ethylenically unsaturated groups,

(B) optionally, reactive diluents,

(C) optionally, photoinitiator, and

(D) optionally at least one coating additive.

The Examiner states that the acrylic polymer of Tsuchiko can be crosslinked using UV. In this context, she also refers to US 2001/0023264 (Yamamoto), para. 0029; US 2002/0037413 (Kishioka et al), para. 0027 and US 6,844,034 (Touhsaent), col. 5, lines 22-37

as evidentiary references. (See the paragraph bridging pages 4 and 5 of the Office Action dated June 11, 2009.) However, in the first additional reference (Yamamoto), the acrylic polymers are reacted with methacryloyloxyethyl isocyanate to yield a reactive acrylic polymer. The second reference (Kishioka et al) describes an acrylic polymer in combination with a UV absorber. Further, the third reference (Touhsaent) describes that an epoxy acrylate is added because it has reactive acrylic double bonds which can react with double bonds in inks that are UV curable. So in each case, specific UV curable double bonds have to be added in one form or another.

Further, contrary to the Examiners' statement, Yamamoto (US 2001/0023264) does not provide a disclosure or suggestion that all polyacrylates are crosslinkable by UV radiation. In fact in Yamamoto the phrases "acrylic polymer" vs. "reactive polymer" are used, see e.g. paragraph [0020], in which the phrase "acrylic polymer" denotes polymers or copolymers obtained by radical polymerization, see paragraphs [0019] and [0020].

However, a polymer which was obtained by a radical polymerization does not contain any reactive acrylic groups anymore, since these reactive groups reacted during the polymerization. Therefore, a polymer without radically polymerizable groups is obtained, which, of course, cannot further be crosslinked by UV exposure, as it lacks reactive groups.

In order to make these acrylic polymers reactive towards radicals (which are obtained by irradiation of photoinitiators with UV light) reactive groups have to be introduced into these polymers, as done in Example 2. In Example 2 an acrylic polymer bearing hydroxy groups in side chains is reacted with acryloyloxyethyl isocyanate, the isocyanate group reacts with the hydroxy group and, hence, a (radically polymerizable) acryloyl groups is coupled to the acrylic polymer which renders the polymer a "reactive polymer", namely reactive towards

radical polymerization, whereas the radicals are provided by the photo initiator upon UV exposure.

Thus, the Examiners' statement (that every acrylic polymer is an acrylic adhesive which is crosslinkable by active radiant energy) with all due respect, is incorrect. In contrast, only those acrylic polymers which bear reactive groups, are crosslinkable in such a way.

Therefore, Yamamoto fails to support the rejection over Tsuchiko.

The acrylic polymers according to Kishioka et al. (US 2002(0037413) (US 2002(0037413) do not bear any reactive groups but need a crosslinker, as pointed out in paragraph [0025] and in the examples, in which polyisocyanates are used as crosslinkers.

Therefore, firstly Kishioka et al., do not disclose adhesives according to the claims of the present invention, which must not require additional compounds as curing agents, and secondly the adhesives according to Kishioka et al. are not crosslinkable by active radiant energy.

Therefore, Kishioka et al. fails to support the rejection over Tsuchiko.

The same is true for Touhsaent (US 6,844,034). The acrylic polymers described in col. 4, line 33 et seq. require a crosslinker, as pointed out in col. 4, line 58 et seq. and col. 5, line 1 et seq.

Therefore, firstly Touhsaent do not disclose adhesives according to the claims of the present invention, which must not require additional compounds as curing agents, and secondly the acrylic polymers according to Touhsaent are not crosslinkable by active radiant energy.

Therefore, Touhsaent fails to support the rejection over Tsuchiko.

The abstract of Tsuchiko (JP 63-0203811) discloses that a radiation-curable pressure sensitive adhesive composition (B) is obtained by mixing

- a thermoplastic resin (a), preferably an acrylic polymer,

- a compound (b) having one ethylenically unsaturated double bond,

- a compound (c) having at least two ethylenically unsaturated double bonds, and

- a photopolymerization initiator (d).

The adhesive (II) according to the present invention has to be crosslinkable by active radiant energy. A simple acrylic polymer as in Tsuchiko, e.g. a polyacrylate, does not have any polymerizable groups. Hence, the acrylic resin according to Tsuchiko cannot be crosslinkable by active radiant energy.

Further, an acrylic resin is not necessarily an adhesive, this is a question of the glass transition temperature Tg of this resin (see e.g. Claim 20). However, the abstract of Tsuchiko is silent about the Tg. Thus, there is no support for equating the thermoplastic resin (a) of Tsuchiko with the pressure sensitive adhesive (II) according to the invention. Therefore, the present invention is not anticipated by Tsuchiko.

Akiyama does not cure the defects of Tsuchiko. The combined references do not result in the present invention because Tsuchiko and Akiyama do not disclose or suggest each element of the claimed mixtures. Further, there is no motivation, suggestion or expectation of success for exchanging the components of Tsuchiko with other components.

Claim 9:

Claim 9 is separately patentable because Tsuchiko and Akiyama, alone or in combination, fail to disclose or suggest that the mixture as claimed in claim 7 comprises

compounds (A) comprising carbonate or urethane (meth)acrylates or carbonate or urethane vinyl ethers.

Claim 24:

Claim 24 is separately patentable because Tsuchiko and Akiyama, alone or in combination, fail to disclose or suggest that the mixture as claimed in claim 11, wherein the adhesive (II) comprises at least one acrylic adhesive.

Claim 25:

Claim 25 is separately patentable because Tsuchiko and Akiyama, alone or in combination, fail to disclose or suggest that the mixture as claimed in claim 11, wherein the adhesive has a glass transition temperature T_g of between -60 and -10°C.

Claim 27:

Claim 27 is separately patentable because Tsuchiko and Akiyama, alone or in combination, fail to disclose or suggest that the mixture as claimed in claim 11, wherein the adhesive composition crosslinkable by active irradiation of energy has a glass transition temperature T_g of between -60 and +10°C.

Thus, Claims 9, 11, 17-18, 24-25 and 27 are Not obvious over by Tsuchiko in view of Akiyama (JP 2002309185, abstract) within the meaning of 35 U.S.C. §103(a). For all the above reasons, it is respectfully requested that this rejection be REVERSED.

Ground (C)

Claims 23, 28-29 stand rejected as being obvious under 35 U.S.C. §103 (a) over Tsuchiko in view of Kamiya (JP 11228926, abstract). That rejection is untenable and should not be sustained.

Applicants note that the rejections are based on the abstracts. The Examiner is requested to consider the references in their entirety and provide a translation. In this context, Applicants wish to draw the Examiners' attention to MPEP 706.02.II.

> "Citation of and reliance upon an abstract without citation of and reliance upon the underlying scientific document is generally inappropriate where both the abstract and the underlying document are prior art. See *Ex parte Jones,* 62 USPQ2d 1206, 1208 (Bd. Pat. App. & Inter. 2001) (unpublished). To determine whether both the abstract and the underlying document are prior art, a copy of the underlying document must be obtained and analyzed. If the document is in a language other than English and the examiner seeks to rely on that document, a translation must be obtained so that the record is clear as to the precise facts the examiner is relying upon in support of the rejection. The record must also be clear as to whether the examiner is relying upon the abstract or the full text document to support a rejection."

If the rejections are based on the full translations, the Examiner is requested to state so on the record.

The rejection of **Claim 28** is moot as claim 28 is not pending. Claim 28 was canceled in the Amendment filed March 26, 2009.

Claim 23 relates to a mixture as claimed in claim 7, wherein the adhesive composition crosslinkable by active irradiation of energy has a molar weight of between 200 000 and 1 500 000 g/mol.

Claim 29 relates to a mixture, comprising:

90 – 99.9% by weight of at least one radiation-curable composition (I); and

0.1 – 10% by weight of at least one pressure-sensitive adhesive (II);

wherein said mixture does not comprise an adhesive which requires an additional compound as a curing agent;

wherein the adhesive composition crosslinkable by active irradiation of energy has a molar weight of between 200 000 and 1 500 000 g/mol.

The Examiner states that the acrylic polymer of Tsuchiko can be crosslinked using UV. In this context, she also refers to US 2001/0023264 (Yamamoto), para. 0029; US 2002/0037413 (Kishioka et al), para. 0027 and US 6,844,034 (Touhsaent), col. 5, lines 22-37 as evidentiary references. (See the paragraph bridging pages 4 and 5 of the Office Action dated June 11, 2009.) However, in the first additional reference (Yamamoto), the acrylic polymers are reacted with methacryloyloxyethyl isocyanate to yield a reactive acrylic polymer. The second reference (Kishioka et al) describes an acrylic polymer in combination with a UV absorber. Further, the third reference (Touhsaent) describes that an epoxy acrylate is added because it has reactive acrylic double bonds which can react with double bonds in inks that are UV curable. So in each case, specific UV curable double bonds have to be added in one form or another.

Further, contrary to the Examiners' statement, Yamamoto (US 2001/0023264) does not provide a disclosure or suggestion that all polyacrylates are crosslinkable by UV radiation. In fact in Yamamoto the phrases "acrylic polymer" vs. "reactive polymer" are used, see e.g. paragraph [0020], in which the phrase "acrylic polymer" denotes polymers or copolymers obtained by radical polymerization, see paragraphs [0019] and [0020].

However, a polymer which was obtained by a radical polymerization does not contain any reactive acrylic groups anymore, since these reactive groups reacted during the polymerization. Therefore, a polymer without radically polymerizable groups is obtained, which, of course, cannot further be crosslinked by UV exposure, as it lacks reactive groups.

In order to make these acrylic polymers reactive towards radicals (which are obtained by irradiation of photoinitiators with UV light) reactive groups have to be introduced into these polymers, as done in Example 2. In Example 2 an acrylic polymer bearing hydroxy groups in side chains is reacted with acryloyloxyethyl isocyanate, the isocyanate group reacts with the hydroxy group and, hence, a (radically polymerizable) acryloyl groups is coupled to the acrylic polymer which renders the polymer a "reactive polymer", namely reactive towards radical polymerization, whereas the radicals are provided by the photo initiator upon UV exposure.

Thus, the Examiners' statement (that every acrylic polymer is an acrylic adhesive which is crosslinkable by active radiant energy) with all due respect, is incorrect. In contrast, only those acrylic polymers which bear reactive groups, are crosslinkable in such a way.

Therefore, Yamamoto fails to support the rejection over Tsuchiko.

The acrylic polymers according to Kishioka et al. (US 2002(0037413) (US 2002(0037413) do not bear any reactive groups but need a crosslinker, as pointed out in paragraph [0025] and in the examples, in which polyisocyanates are used as crosslinkers.

Therefore, firstly Kishioka et al., do not disclose adhesives according to the claims of the present invention, which must not require additional compounds as curing agents, and secondly the adhesives according to Kishioka et al. are not crosslinkable by active radiant energy.

Therefore, Kishioka et al. fails to support the rejection over Tsuchiko.

The same is true for Touhsaent (US 6,844,034). The acrylic polymers described in col. 4, line 33 et seq. require a crosslinker, as pointed out in col. 4, line 58 et seq. and col. 5, line 1 et seq.

Therefore, firstly Touhsaent do not disclose adhesives according to the claims of the present invention, which must not require additional compounds as curing agents, and secondly the acrylic polymers according to Touhsaent are not crosslinkable by active radiant energy.

Therefore, Touhsaent fails to support the rejection over Tsuchiko.

The abstract of Tsuchiko (JP 63-0203811) discloses that a radiation-curable pressure sensitive adhesive composition (B) is obtained by mixing

- a thermoplastic resin (a), preferably an acrylic polymer,
- a compound (b) having one ethylenically unsaturated double bond,
- a compound (c) having at least two ethylenically unsaturated double bonds, and
- a photopolymerization initiator (d).

The adhesive (II) according to the present invention has to be crosslinkable by active radiant energy. A simple acrylic polymer as in Tsuchiko, e.g. a polyacrylate, does not have any polymerizable groups. Hence, the acrylic resin according to Tsuchiko cannot be crosslinkable by active radiant energy.

Further, an acrylic resin is not necessarily an adhesive, this is a question of the glass transition temperature Tg of this resin (see e.g. Claim 20). However, the abstract of Tsuchiko is silent about the Tg. Thus, there is no support for equating the thermoplastic resin (a) of Tsuchiko with the pressure sensitive adhesive (II) according to the invention. Therefore, the present invention is not anticipated by Tsuchiko.

Kamiya does not cure the defects of Tsuchiko. The combined references do not result in the present invention because Tsuchiko and Kamiya do not disclose or suggest each element of the claimed mixtures. Further, there is no motivation, suggestion or expectation of success for exchanging the components of Tsuchiko with other components.

Claim 23:

Claim 23 is separately patentable because Tsuchiko and Kamiya, alone or in combination, fail to disclose or suggest that the mixture as claimed in claim 7, wherein the adhesive composition crosslinkable by active irradiation of energy has a molar weight of between 200 000 and 1 500 000 g/mol.

Thus, Claims 23, 28-29 are Not obvious over by Tsuchiko in view of Kamiya (JP 11228926, abstract) within the meaning of 35 U.S.C. §103(a). For all the above reasons, it is respectfully requested that this rejection be REVERSED.

CONCLUSION

For the above reasons, it is respectfully requested that all the rejections still pending in the Final Office Action be REVERSED.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.

Kirsten A. Grueneberg, Ph.D.
Registration No.: 47,297

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
NFO:KAG:
(OSMMN 08/07)

VIII. CLAIMS APPENDIX

Claim 7: A mixture, comprising at least one radiation-curable composition (I) and at least one pressure-sensitive adhesive (II);

wherein said mixture does not comprise an adhesive which requires an additional compound as a curing agent;

wherein the adhesive (II) comprises an adhesive composition crosslinkable by active radiant energy;

wherein the radiation-curable composition (I) comprises

(A) at least one polymerizable compound comprising two or more copolymerizable, ethylenically unsaturated groups,

(B) optionally, reactive diluents,

(C) optionally, photoinitiator, and

(D) optionally at least one coating additive.

Claim 8: A mixture as claimed in claim 7, wherein the radiation-curable composition (I) comprises

40 – 100% by weight of at least one polymerizable compound comprising two or more copolymerizable, ethylenically unsaturated groups (A),

0 – 60% by weight of reactive diluents (B),

0 – 20% by weight of photoinitiator (C), and

0 – 50% by weight of at least one coating additive (D)

wherein (A), (B), (C) and (D) together make up 100% by weight.

Claim 9: A mixture as claimed in claim 7, comprising compounds (A) comprising carbonate or urethane (meth)acrylates or carbonate or urethane vinyl ethers.

Claim 10: A mixture as claimed in claim 7, comprising at least one polymer-analogously modified copolymer as compound (A).

Claim 11: A mixture, comprising:

90 – 99.9% by weight of at least one radiation-curable composition (I); and

0.1 – 10% by weight of at least one pressure-sensitive adhesive (II);

wherein said mixture does not comprise an adhesive which requires an additional compound as a curing agent;

wherein the adhesive (II) comprises an adhesive composition crosslinkable by active radiant energy.

Claim 17: A method of coating a substrate, comprising:

coating a substrate with a coating material comprising a mixture, thereby obtaining a coated substrate;

wherein said substrate is plastic, glass or metal;

wherein said mixture comprises at least one radiation-curable composition (I) and at least one pressure-sensitive adhesive (II);

wherein said mixture does not comprise an adhesive which requires an additional compound as a curing agent;

wherein the adhesive (II) comprises an adhesive composition crosslinkable by active radiant energy;

wherein the radiation-curable composition (I) comprises

(A) at least one polymerizable compound comprising two or more copolymerizable, ethylenically unsaturated groups,

(B) optionally, reactive diluents,

(C) optionally, photoinitiator, and

(D) optionally at least one coating additive.

Claim 18: A method of coating a substrate, comprising:

coating a substrate with a coating material comprising a mixture, thereby obtaining a coated substrate;

wherein said substrate is metal foil, plastic film or a composite of metal foil and plastic film;

wherein said mixture comprises at least one radiation-curable composition (I) and at least one pressure-sensitive adhesive (II);

wherein said mixture does not comprise an adhesive which requires an additional compound as a curing agent;

wherein the adhesive (II) comprises an adhesive composition crosslinkable by active radiant energy;

wherein the radiation-curable composition (I) comprises

(A) at least one polymerizable compound comprising two or more copolymerizable, ethylenically unsaturated groups,

(B) optionally, reactive diluents,

(C) optionally, photoinitiator, and

(D) optionally at least one coating additive.

Claim 19: A mixture as claimed in claim 7, wherein the adhesive (II) comprises at least one acrylic adhesive.

Claim 20: A mixture as claimed in claim 7, wherein the adhesive has a glass transition temperature T_g of between -60 and -10°C.

Claim 22: A mixture as claimed in claim 7, wherein the adhesive composition crosslinkable by active irradiation of energy has a glass transition temperature T_g of between -60 and +10°C.

Claim 23: A mixture as claimed in claim 7, wherein the adhesive composition crosslinkable by active irradiation of energy has a molar weight of between 200 000 and 1 500 000 g/mol.

Claim 24: A mixture as claimed in claim 11, wherein the adhesive (II) comprises at least one acrylic adhesive.

Claim 25: A mixture as claimed in claim 11, wherein the adhesive has a glass transition temperature T_g of between -60 and -10°C.

Claim 27: A mixture as claimed in claim 11, wherein the adhesive composition crosslinkable by active irradiation of energy has a glass transition temperature T_g of between -60 and +10°C.

Claim 29: A mixture, comprising:

90 – 99.9% by weight of at least one radiation-curable composition (I); and

0.1 – 10% by weight of at least one pressure-sensitive adhesive (II);

wherein said mixture does not comprise an adhesive which requires an additional compound as a curing agent;

wherein the adhesive composition crosslinkable by active irradiation of energy has a molar weight of between 200 000 and 1 500 000 g/mol.

IX. EVIDENCE APPENDIX

None.

X. RELATED PROCEEDINGS APPENDIX

None.